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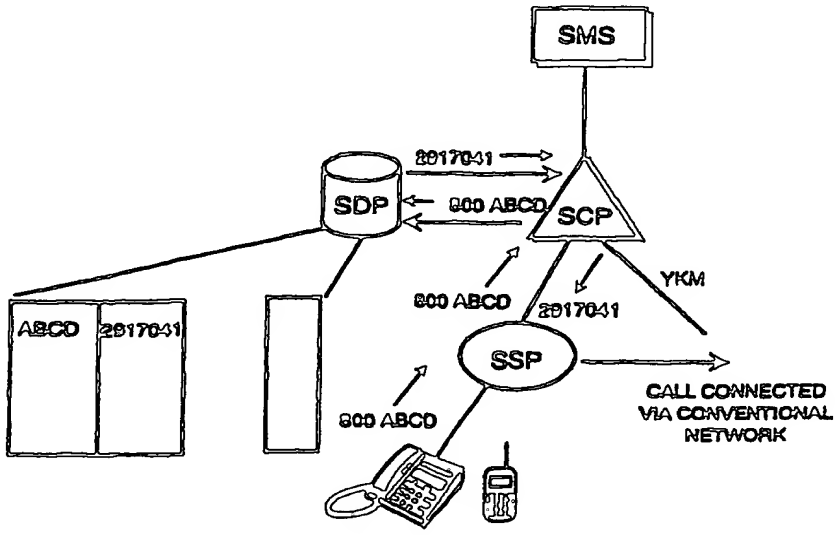

(57) Abstract

A method and an arrangement for making a telephone call by a terminal is disclosed. A desired predefined service number is announced to an exchange, which identifies the number and subsequently connects the call to an intelligent network. A predefined personal identification number and password are announced in accordance with the instructions of the intelligent network and the right of use is verified in the intelligent network. Thereafter the user is provided with an access to a certain predefined number space. A number operating in said desired number space is selected in the telephone of the user, wherein the prefix of said number is converted under a control by the intelligent network to enable the access to the number space, to route the call in the intelligent network to a subscription disclosed by the converted prefix and the number.

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An arrangement and a method for making a telephone call

Field of the Invention

The invention relates to an arrangement and to a method for making a telephone call.

Background of the invention

A requirement to support and to produce various services has taken the development of communications networks towards so called intelligent network (IN). An intelligent network may be defined as an architecture which can be applied to the most of the communications networks regardless the used network technology. The object thereof is to create, control and manage teleservices providing surplus value. One special feature of the intelligent network is to provide modular operations which are independent from the used service and which can be attached to each other as components when creating new services, whereby the definition and designing of new services will become easier. A further special feature is that the provision of the services is independent from the telecommunications network. The services are separated from the physical network structure which is disposed at the lowest level, and thus it is possible to distribute them.

CCITT (International Telegraph and Telephone Consultative Committee) has defined so called Intelligent Network Conseptual Model (INCM) of an intelligent network in the recommendation CS-1 (Capability Set 1). The model consists of four levels, each of them presenting an abstract view of the possibilities provided by the intelligent network. The second highest level of the model is a global functional plane and it includes a view of the intelligent network as service independent building blocks (SIBs) from which the desired properties of services and services are gathered by means of a service logic. This level contains also a basic call process (BCP) covering the entire network as well as a point of initiation (POI) and a point of return (POR) between the BCP and the SIBs.

A basic call state model (BCSM) defined in connection with the IN network is a description of the functions of the call control function needed for the build up and maintenance of the connection route between the users. It recognises those points (detection points) in the call and connection process in which the IN service logic objects may be in an interactive relation with the basic call and the connection management features. It provides a structure

for the description of those basic call and connection events which may lead into an activation of the IN service logic object, and for the description of those points in which the transfer of the control may happen.

An example of the intelligent network services is so called AAB service (Automatic Alternative Billing). This enables the user to make a call from any telephone, wherein the charging will be debited from the account of the user, said account being maintained by the operator, and the billing will be accomplished later. The service provider will designate the service user with an identifying account code and a personal identification number (PIN). The service will be started as the user selects an access code which is followed by the number to which the user wishes to make the call. The SSP recognises the access code and transfers the control to the SCP. The SCP requests the user to give the identification code and the PIN number. The code and PIN number given by the user are then verified by performing a database inquiry, whereafter the call is connected. The bill for the call will be proceeded afterwards in accordance with the pulses generated by the exchange and indicating the length of the call and the charging information given by the SCP.

Firstly, it is characteristic for the present telephone systems that different databases are used and secondly that the call and the subscriber specific computations are accomplished afterwards. In a fixed network it is known to use a subscriber database of an exchange and in mobile telephone network, such as is a GSM network, a home location register (HLR) in which the permanent subscriber data has been stored. In the above mentioned AAB service an intelligent network database is used, which includes the identification code and the PIN number.

It is common to all of these subscriber databases that they are created and updated by the operator of the network in question. It is known to allocate various subscriber related parameters to the database. Thus it is, for instance, possible for the network operator to allocate a parameter to the subscriber file which prevents the subscriber to make, for instance, international calls or to access certain services provided by means of the intelligent network, such as entertainment services. The price level of the blocked call is usually high. Especially the expensive entertainment services realized by an intelligent network have proven to be problematic, and thus it has already been possible to set therein a certain time limit after which the call will be switched off.

Summary of the invention

In view of the above, there are some problems related to the management of the subscriber data of the present networks. The only way is to totally prevent an access to numbers beginning with a certain prefix. PCT/FI95/00615 describes how it is possible to obtain real time information, eg. price and statistical data, about the calls of an subscriber during a telephone call. Thus it is possible to control the calls of a so called problem subscriber during a call. The time limit realized in the intelligent networks and allocated to entertainment services relates to one single call, and concerns thus all calls made to the entertainment telephone number, and will thus not prevent the same subscriber from calling time after time to the same service, since the subscriber and telephone subscription specific monitoring has not been hitherto possible.

Telephone cards exist which can be bought and which include a certain amount of calling time. These are sensitive for abuse. It is always possible to call with these if there is any balance left. They do not, however, include such a feature that they would allow a call to a certain number space only. The holder of the card has to dial all numbers of the desired called party. Especially tourists who are in a foreign country are often facing the problem that they do not know the number required to be able to call eg. the homeland. It is possible to break into a smart card provided with a magnetic strip, ie. it is possible to program calling time into it such that the operator will not be aware of that. The sellers and distributors of the telephone cards may misuse the freely visible PIN and the password or the number of the magnetic strip. A card made from a board breaks, whereafter said PIN (=Personal Identity Number) and password information will become destroyed. The card telephone booths require special equipment for the reading of the magnetic strip and are expensive when compared to an IN booth which requires only an telephone headset and a keyset.

It is an object of the invention to overcome the above disadvantages.

According to the present invention, in a method for making a telephone call by a terminal, a desired predefined service number is announced to an exchange, in which the number is then identified and the call is connected to an intelligent network. A predefined personal identification number and password are announced in accordance with the instructions of the intelligent network and a right of use is verified in the intelligent network. According to the invention the user is provided with an access to a certain predefined number space, and a number operating in the desired number space is selected in the telephone of the user, wherein the prefix of said number is converted under a control by the intelligent network to enable the access to the number space, to route the call in the intelligent network to a

subscription disclosed by the converted prefix and the number.

In addition, according to the present invention, in an arrangement for making a telephone call by a terminal, a desired predefined service number is announced to an exchange from the terminal, a call is connected from the exchange into an intelligent network, a predefined personal identification number and a password are announced in accordance with the instructions of the intelligent network, the announced numbers are verified. Thereafter the user is provided with an access to a certain predefined number space. The user selects from the terminal a number operating in the predefined desired number space defined by the service, in which number a prefix has been added to enable the access into the number space defined by the service, to route the call into a subscription disclosed by the prefix and the number.

The invention enables especially calls which are directed to a certain area or to a certain number group or even to a certain number from any digital telephone subscription. Usually the location of the caller is limited into the operation area of the operator. The invention provides a possibility for wider free competition between various telecommunication companies whereby the situation of the consumer will be improved. The invention provides especially a possibility to establish a connection from a foreign country to a certain country or certain telecommunications network, or directory area, in a simple manner. When a user uses the card according to the invention the user can be sure that he/she is the first one using said card.

Brief description of the drawings

In the following the invention will be described with reference to the annexed drawing, in which

Figure 1 discloses a physical architecture of an intelligent network,

Figure 2 illustrates a number conversion service of an intelligent network,

Figure 3 illustrates the operation of an intelligent network in a system according to the present invention,

Figure 4 illustrates a flow chart of how the operation according to the present invention is incorporated into the monitoring of the caller related computations, and

Figure 5 discloses as a flow chart the events during a call.

A detailed description of the drawings

A physical architecture of the intelligent network is shown in figure 1. The service switching point SSP provides the user with an access path into the network and handles all necessary selection operations. It is capable of detecting the service requests of the intelligent network. Operationally, the SSP includes the call management and service selection functions. The service control point (SCP) includes those service logic programs which are used to produce the services of the intelligent network. A service data point (SDP) includes data which is used by the service logic programs for producing individual services. The SCP and/or SMP may use the services of the SDP either directly or through a signal network using INAP protocol (an application protocol of the intelligent network according to an OSI model (Open Systems Interconnection) and belonging to the layer 7, ie. an application level communication protocol for the message transfer between the different nodes (SSP/SCP) of the intelligent network). The additional services provided by an intelligent peripheral (IP) are, for example, voice mails, synthetic voice and speech recognition apparatuses and voice generation. A service switching and control point (SSCP) consists of the SCP and the SSP in a single node. A service management point (SMP) accomplishes the control of the service management, provision and operation, and it can become connected to all of the other physical objects. Operational examples are the management of the database, monitoring and testing of the network, management of the network traffic and collecting of network data. A service creation environment point (SCEP) is used to define, develop and test the services of the intelligent network and to supply the service to the SMP. An adjunct AD operationally corresponds to the service control point SCP, but is connected directly to the SSP. A service node (SN) may control the services of the intelligent network and perform data transfer with the users. It communicates directly with one or several of the SSPs. A service management access point (SMAP) is a physical object which provides certain users with a connection to the SMP. Operationally the SSP corresponds to a service switching function (SSF) which links a call control function (CCF) and a service control function (SCF). It allows the SCF to control the CCF. When a subscriber, whose calls are desired to be controlled, makes a call, the A number and also the B number of the subscriber are directed to the intelligent network at least in such case when a number conversion is made to it in the intelligent network (compare to figure 2). If the call is a call using an intelligent network service, eg. a call to an entertainment service, the SCP will return routing instructions and charging information to the exchange. When

the call has been routed to the B subscriber and the speech connection becomes connected, pulses are generated in a pulse generator. In other systems the telephone exchange calculates the costs of the call afterwards on grounds of the pulses generated during the call and the charging information. In some other systems calculating pulses generated during the call are transferred to the service control point SCP in a manner defined by a monitoring request transmitted by the service control function SCF. The monitoring requests are responded by a service switching function (SSF). The SCP calculates in real time and on grounds of the pulses and the charging information the price of the call as the call proceeds. The SCP has retrieved the subscriber data from a subscriber file database of the subscriber, and if it includes data relating to the price of the call, for instance data about how much the call may cost at most or whether there is any balance left or not, the call will be switched off or proceeded in some other possible and controlled manner.

Figure 2 discloses one known basic service in the intelligent network, namely a number conversion service. Only the essential physical objects are shown in the figure. A subscriber dials eg. number 800+ABCD (ABCD being any number sequence). An service control function of an exchange will identify from the 800 prefix that it is an intelligent network call in question, and thus an intelligent network service is requested through an intelligent network switching point SSP. It sends, using the common channel signalling, an inquiry to the control point SCP which includes the number 800+ABCD. A corresponding service program within the SCP reviews from the SDP file which is the number in an ordinary telephone network which corresponds the number 800+ABCD. In this example it is number 291 7041. The SCP returns this number to the SSP which transfers it further to the call control of the exchange, which will then route the call to this number. When the SCP is transferring the number to the SSP, it will also transfer the charging information concerning the call. As the exchange generates pulses during the call, the call charging will be accomplished later on grounds of these pulses and the charging information given by the SCP. It is known that C number in general means that number which is provided by the number conversion, which the service of the intelligent network has received from the database. In this case the A number is the number of the calling subscriber, the B number is the number dialled by the calling subscriber and including the personal identification of the B subscriber, and the C number is then that real number retrieved from the database to which the call has to be routed.

In figure 3 an incoming call from a telecommunications network comes into an input surface of a SSP. The number in the telecommunications network, to which the call has been made, is eg. 0800 XXXX as shown on the card. The card is prepaid. A card identification

(PIN, a personal identification number) and a password thereof may be written on the top of the card. The password is covered by an erasable coverage 20 (scraping surface, such as in the lottery tickets provided with an erasable cover surface), so that the user can be sure that the card is feasible and that it has not been previously used. When the number given by the user has been transferred to the SSP or similar and to the SCP and to the database of the intelligent network, the intelligent network requests desired data from the user, such as the identification number and the password. When these match and the user still has some connection time left, he/she may continue. The card may be bound to one area or one service, ie. it is possible to establish a call only to eg. a certain telecommunications area or directory area or service number without using an additional prefix, or using a shorter prefix than usual, when the user would call from a corresponding telephone. Figure 3 discloses such a service in which the same card (identification number) has an access to several different services or telecommunications areas (countries), directory areas (cities) or services (weather forecast, time service etc.) or also to a mobile network. When the user has received an information that it is possible to establish a call by using his/hers identification number, he/she may choose eg. "91", "92" or "93". The user may receive a voice message about those possibilities which relate to this number and instructions how to continue the call by using the IP. When the user has dialled for instance "91" and then presses the key "1", he/she may initiate the call by giving eg. an area code - a telephone number without the routing number for the target country. The country code is attached in the intelligent network ahead the number the user did dial in. A request is sent to the SCP by using a common channel signalling. A corresponding service program in the SCP verifies from the SDP file the number which has to be attached prior to the dialled number 121212. It might be number 1. The SCP returns the converted number 1121212 back to the SSP, which further sends it to the service control of the exchange, which then routes the call to this number. When giving the number to the SSP the SCP also gives the charging information concerning the call. Thus it is possible to know how much calling time a user identified by a certain identification does have. Thereafter the call is established in accordance with the normal call establishment practice. In case the called number does not answer, the user may call again or just simply stop calling. When the user has pressed "91" and "1" he/she may be provided with a possibility to choose some areas or cities within the USA, wherein the SCP is containing the necessary information about the numbers allowing an access to that area. Thus it is possible for the user to continue the search of an identification allowing an access to the area from the SDP, if he/she desires to do so. When the searched information has been found the user may dial the number of the subscription in that area in a similar manner as if he/she would be located in that area. In figure 3 the tape recorder has been designated by numeral 10, windows by 11,12,13, said windows including

table data of the desired target area into which the access is enabled by the service number and the appropriate numbers. Number 14 corresponds the caller, and 15 the forwarding service provider or similar.

If the user has dialled "92" he/she may be connected by means of a voice message to a certain city, eg. Tampere, if he/she presses "1". In accordance with this information the user then dials directly the desired number in Tampere without any additional directory area numbers. The invention provides the user with a possibility to act as a caller of so called "local call" without any need to remember the actual directory area code. The third case in figure 3 is that the user dials "93" whereafter he/she becomes connected to voice messages, eg. by pressing "1", available for the user identification (eg. a service number for a weather forecast). Fourth case is that the user dials eg. code "94", whereafter he/she is virtually transferred in advance to an environment which is dependent of the number. If the user is eg. originating from London but physically located in Finland, he/she may call to London by selecting a local telephone number just as he/she would be in London and the IN will incorporate the long distance level prefix and the country code as well as the directory area code for London into the call (94 directs the paging into the table of the IN, from which the prefixes from Finland to London are selected). However, if the user wishes to make a call to eg. Sweden, he/she chooses an international prefix as if he/she would be in London and then the country code and the directory area code and the telephone number. The IN modifies this number by replacing the right prefix prior to the number, whereafter the call can be normally connected. The IN includes a table which has the prefixes and the prefixes corresponding to them to be joined to the corresponding numbers. If this user wishes to make a call to Finland, he/she can use the international prefix as in London, and then the country code and the directory area code. The IN modifies this number by removing the international prefix and the country code. If this call is a local call in Finland, the IN will also remove the directory area code, but if the call is directed to another telecommunications area, the In will add the long distance level prefix therein and the call will become connected normally. It is, however, desirable that the subscriber can call the local calls without a need to select this long number sequence in the entirety thereof by using another service number or by using a special code after the service number "94".

Alternatively, the card or the user may have an identification number and a password which allow an access to one single location, area, directory area etc. only. Eg. after giving the required PIN code and the password the caller receives a notification by means of which the target country, and more precisely eg. the city and the instructions for the selection, are announced. After the right of use has been verified the user dials the desired telephone

number subsequent to either a voice message or similar. The dialled number is directed to the intelligent network or the SDP, which includes the files about the destinations which are accessed by dialling the numbers 0800-XXXX (X=integer 0-9). 0800 is the number designating the service by means of which the exchange is able to route the call to the network switching point, XXXX is any arbitrary number, which in connection with 0800 number or similar identifies the target service. 0800-2122 may correspond to prefixes 990-46-8, by means of which it is possible to access Stockholm from Finland. 0800-3133 may correspond to YY-358-21, by means of which it is possible to access Finland from abroad (YY is the code which has to be given for the international calls from any country). For example, by number 0800-1234 it is possible to access a file which converts the dialled number 212121 to number 931212121 (directory area number - subscriber number) corresponding to the C number. The converted number is returned by the network management system SCP to the SSP which routes the call ahead or instructs the telephone exchange to direct the call establishment in a normal manner into the converted number. Usually the prefix is retrieved from the SDP, after which the user chooses a target number he/she desires to access. It is possible add a country and/or directory area code (area number) in question prior to the B number. As the calling time starts to get close to the run out thereof, the caller is notified about the running out of the time. Other messages can be added in accordance with each application as well as messages of the possibility of renewing the card or reloading of additional calling time. The possibility of buying additional calling time is provided such that either the telephone company, a financial institution or any outlet of the cards is provided with a possibility of a remote operating of the IN, by means of which it is possible to pay additional calling time to the account of the card in question. It is also possible to allow a possible additional payment through a dialling by the subscriber, if a credit limit is defined for said card in question. The prices of the cards may vary depending on the target numbers of the cards. The sales of the cards might occur in any outlet, shop, kiosk etc. Other known distribution channels can also be utilized instead of the cards. It is eg. possible to protect an ordinary fixed telephone subscription from misuse. A certain identifier or password is required prior the telephone is used to be able to use it when eg. the user wishes to access services having a price which exceeds a certain limit, such as when making calls from the subscribers subscription outside the network area or abroad. These cases use also such function of the intelligent network, by means of which the telephone number is converted to the numbers of certain area or service.

The invention uses a keypad selection operation according to the present DTFM (Dual Tone Multi-Frequency) signalling standard, by which the IN operation is activated. The invention is not limited to this solution only, but also other corresponding solutions for transferring

sound or dialling can be utilized. However, the invention is not dependent from the IN type apparatus.

When the idea of the cards is applied within a national area, eg. within a certain telecommunications area, it is also possible to use it as a card for different services or entertainment calls. Thus the service telephones liable for charges could be connected such that eg. only a certain identification allows an access to the service. It is also possible to limit the group of the callers to certain ones, when it is desired that only the identification of the card holder is enabled for making a call. An example of such are the dormitories in which the card holders would be the only ones to be able to make calls of certain areas or services.

In the above cases a HOT-line, which is a trade mark of Ericsson, is a mode by means of which the telephone will automatically connect itself after a certain time to a certain number, such as to an IN service number, subsequent to the lifting off of the headset or otherwise switching on the telephone. After having accessed the IN service according to the above described, it is possible to continue the call operations according to the present inventions after the PIN and the password has been fed in. This enables, for instance, telephones in holiday homes and similar places in which the subscription does not have a proper owner to whom it would be possible to sent a bill afterwards. All normal calls require a telephone card in which the payment has been already prepaid or that the card has credit on it. An exception of this are, of course, emergency calls, such as 112 (in Finland), and similar, which are always accessible without any card. This improves the safety of the consumer since it enables a telephone at locations in which a common public telephone is usually used centrally in one area.

Figure 4 discloses how it is possible to use the solution according to the invention to form a part of the monitoring of the payment of the call. When a call is made to the above mentioned number, the call is connected to the SCP, in which the user's right to use the service is verified. The user may be provided with an information about the remaining balance. If there is some balance left, the call will be continued, and if not, an announcement how to act will be given. When a service is in use the user selects the desired number which will be converted into a form which the exchange can direct into the desired area. If the called party is busy or cannot be reached, the call will be ended or a new possibility for a call will be provided. After the call has been answered the balance of the user will be monitored and when the balance runs out, the call will be interrupted, and a notice will be given of the possibility to load some additional time. The management logic in the service control point SCP will be formed immediately into the user database. During

the call, the calculating pulses generated by the telephone exchange are delivered to the intelligent network of the service in a manner defined by a monitoring request transmitted by the service control function SCF, wherein said IN computes the costs of the call during the call on grounds of the charging information given by the calculating pulses and the control point SCP, whereby the momentary cost of the call becomes known in real time.

The method and arrangement according to the invention enables several applications. It can be used when controlling prepaid calls, to which calls restrictive rules or other services may possible be related. In relation to specific calls it is possible to limit the duration of one single call on the basis of the charges thereof. A subscriber related call control can also be easily realized. It is for instance easy to restrict the total number of the calls the subscriber is allowed to make. It is possible to automatically register the subscriber to the subscriber database on the behalf of the telecommunications network and the registration can be implemented such that the subscriber does not even note it. This allows the control of eg. the traffic of the GSM visitor subscribers such that they cannot cause credit losses to the operators. The calls of so called problem subscribers can be easily controlled and real time information can be obtained from them, and thus it is possible to initiate the necessary actions in time in respect of the subscriber concerned.

Figure 5 discloses a flow chart of the solution according to the invention in accordance with the progress of the call. The service is activated when calling to a certain number and a home profile is activated for the user, said profile corresponding the activating code, eg. Dallas, London. When the user has dialled in the desired target number, eg. from London, the intelligent network converts the dialled number such that it becomes provided with a prefix in accordance with a register in the intelligent network such that the user may even not notice it. Thereafter the call is routed and established to the destination in question.

The above description and the annexed figures are only intended to illustrate the present invention. Various variations and modifications of the invention will become clear for the skilled person. These do not depart from the scope and spirit of the invention as is defined by the appended claims.

Claims

1. A method for making a telephone call by a terminal, wherein a desired predefined service number is announced to an exchange, in which the number is identified and the call is connected to an intelligent network, a predefined personal identification number and password are announced in accordance with the instructions of the intelligent network, a right of use is verified in the intelligent network, c h a r a c t e r i z e d in that the user is provided with an access to a certain predefined number space, a number operating in the desired number space is selected in the telephone of the user, wherein the prefix of said number is converted under a control by the intelligent network to enable the access to the number space, to route the call in the intelligent network to a subscription disclosed by the converted prefix and the number.

2. A method according to claim 1, c h a r a c t e r i z e d in that the space is preferably an area restricted by a country or a directory area.

3. A method according to claim 1, c h a r a c t e r i z e d in that the space is a service number.

4. A method according to any of claims 1 to 3, c h a r a c t e r i z e d in that a target area, preferably eg. a directory area, is selected, whereafter the operation within the directory area is similar to the operation of a subscriber of the directory area.

5. A method according to claim 1 for managing subscriber information in a telephone network having a telephone exchange of the network to which a service switching point SSP of the intelligent network in connected to, the SSP providing an access from the telephone network to the services offered by a service control point SCP of the intelligent network, wherein a service data point SDP related to the service control point SCP comprises a database of the subscribers to be managed, an individual subscriber record of the database including at least a subscriber identification and other subscriber data concerning the subscriber, and the data of the database being usable for a real time control of the calls of the user after the service switching point SSP has directed a new call accomplished by the managed subscriber into the intelligent network, wherein the number dialled in by the user is converted to a number of the desired number space and the call is routed to a number defined by said space concerned.

6. A method according to claim 5, c h a r a c t e r i z e d in that a management logic of the

subscriber data in the service control point SCP is formed immediately into the database, calculating pulses generated by the telephone exchange are forwarded during the call into the intelligent network in a manner defined by a monitoring request sent by a service control function SCF, a charge for the call is calculated in the intelligent network during the call on grounds of the calculating pulses and the call charging information provided by the control point SCP, whereby the momentary charge for the call is known in real time.

7. A method according to one or several of claims 1 to 6, c h a r a c t e r i z e d in that the identification entitling the use of the service is scraped visible from below of a scraping surface.

8. A method according to one or several of claims 1 to 7, c h a r a c t e r i z e d in that after the user has accessed the certain predefined number space a number operating in the desired number space is selected from the telephone of the user, to which number a prefix is added under control of the intelligent network to enable the access into the number space, to route the call into a subscription disclosed by the prefix added in the intelligent network and the number.

9. A method according to one or several of claims 1 to 7, c h a r a c t e r i z e d in that after the user has accessed the certain predefined number space, a number operating in the desired number space in selected from the telephone of the user, from which number a prefix is removed under control of the intelligent network to enable the access into the number space and a prefix is either added or not added therein, to route the call into a subscription disclosed by the prefix added in the intelligent network and/or the number.

10. An arrangement for making a telephone call by a terminal, in which arrangement a desired predefined service number is announced to an exchange from the terminal, a call is connected from the exchange into an intelligent network, a predefined personal identification number and a password are announced in accordance with the instruction of the intelligent network, the announced numbers are verified, whereafter the user has an access to a certain predefined number space, the user selects from the terminal a number operating in the predefined desired number space defined by the service, in which number a prefix has been added to enable the access into the number space defined by the service, to route the call into a subscription disclosed by the prefix and the number.

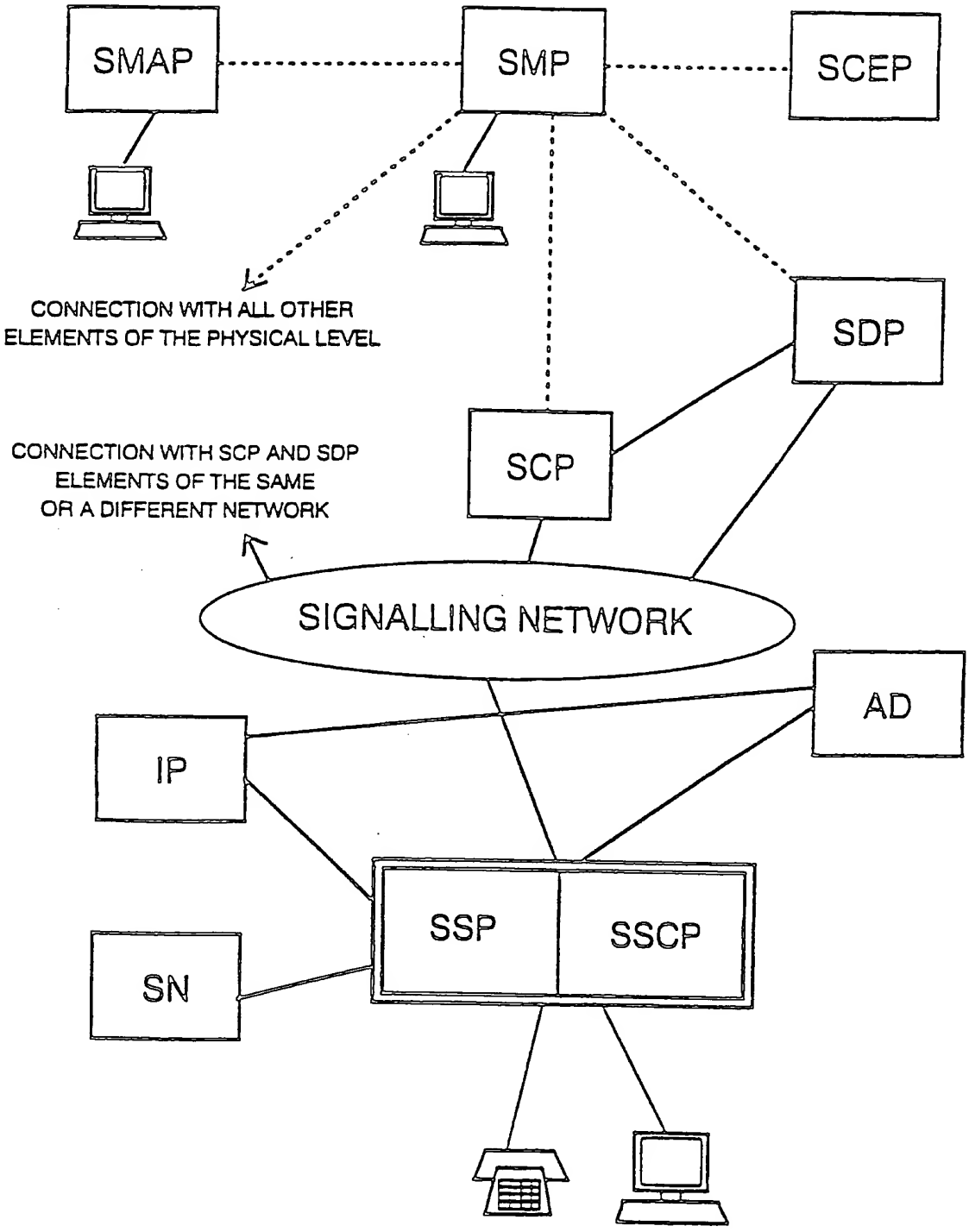
SMAP
SMP
SCEP
CONNECTION WITH ALL OTHER ELEMENTS OF THE PHYSICAL LEVEL
SDP
SCP
CONNECTION WITH SCP AND SDP ELEMENTS OF THE SAME OR A DIFFERENT NETWORK
SIGNALLING NETWORK
AD
IP
SSP
SSCP
SN

FIG. 1

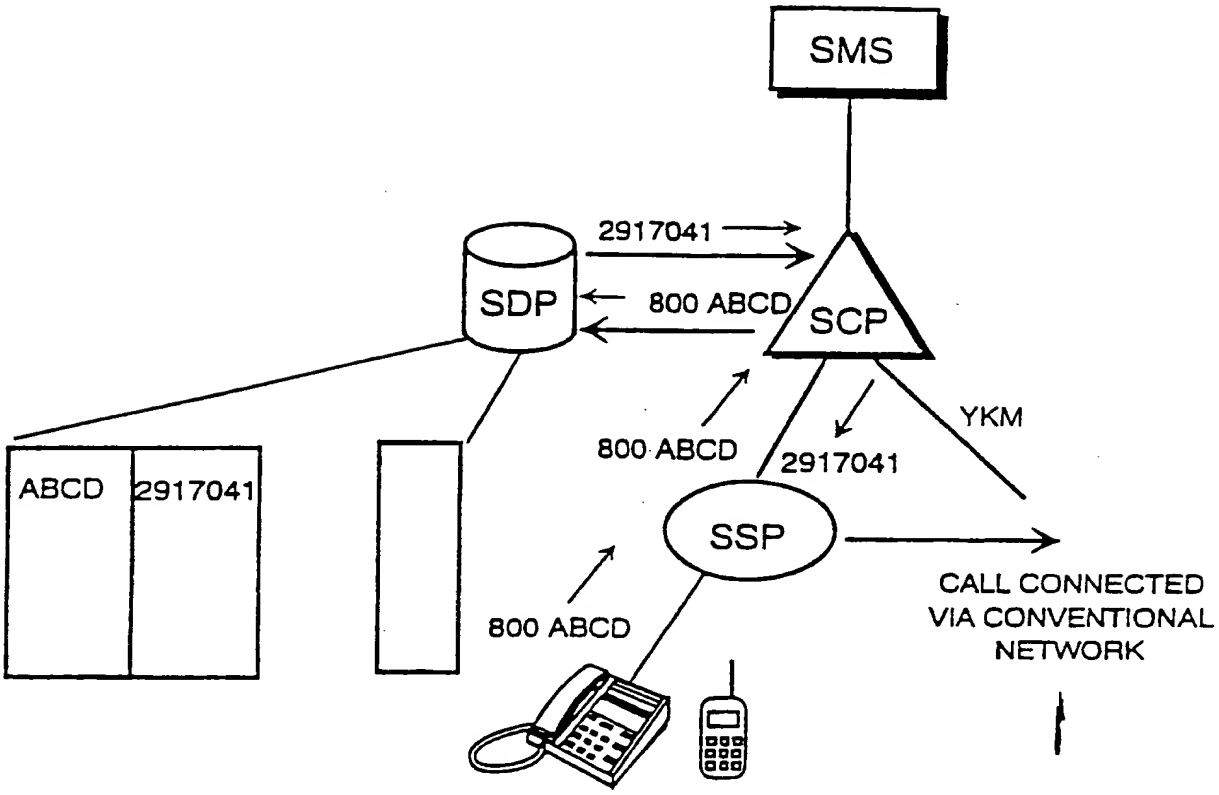
SMS
2917041
SDP
800 ABCD
SCP
YKM
800 ABCD
2917041
ABCD
2917041
SSP
800 ABCD
CALL CONNECTED
VIA CONVENTIONAL
NETWORK

FIG. 2

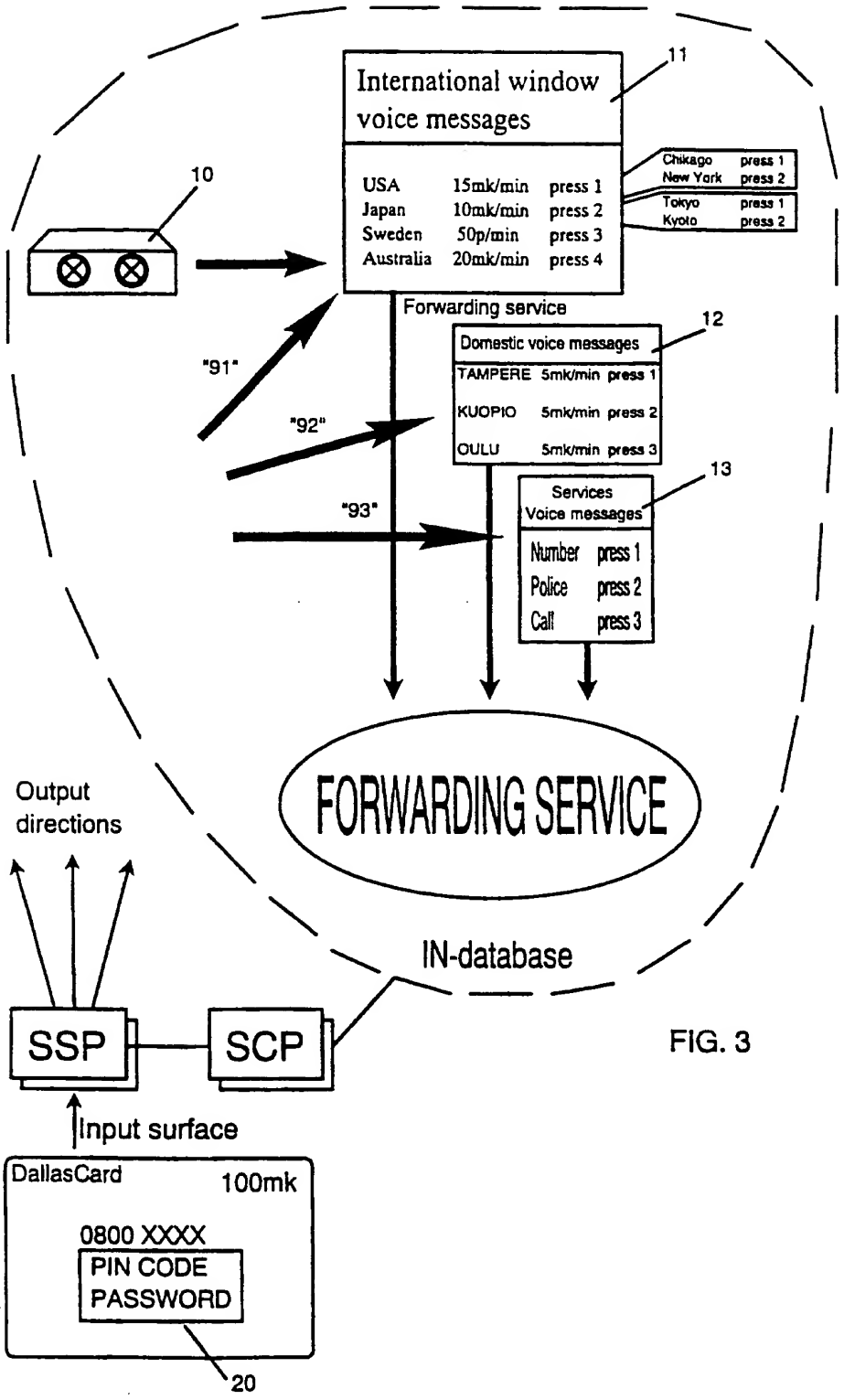
International window voice messages
11
USA 15mk/min press 1
Japan 10mk/min press 2
Sweden 50p/min press 3
Australia 20mk/min press 4
Chikago press 1
New York press 2
Tokyo press 1
Kyoto press 2
10
Forwarding service
12
Domestic voice messages
TAMPERE 5mk/min press 1
KUOPIO 5mk/min press 2
OULU 5mk/min press 3
"91"
"92"
"93"
13
Services Voice messages
Number press 1
Police press 2
Call press 3
FORWARDING SERVICE
Output directions
IN-database
SSP
SCP
Input surface
DallasCard 100mk
0800 XXXX
PIN CODE
PASSWORD
20

FIG. 3

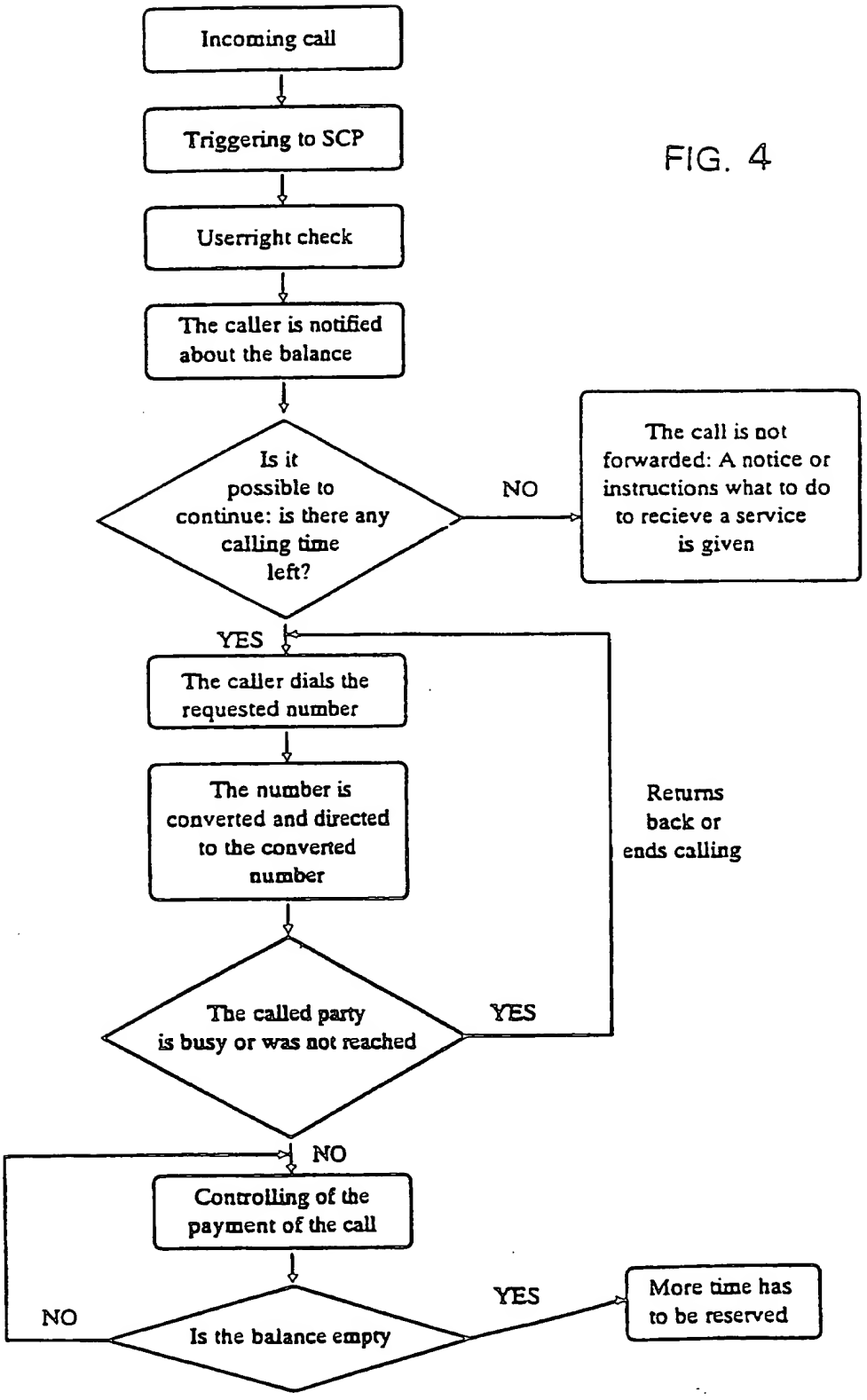
Incoming call
Triggering to SCP
Userright check
The caller is notified about the balance
Is it possible to continue: is there any calling time left?
NO
The call is not forwarded: A notice or instructions what to do to recieve a service is given
YES
The caller dials the requested number
The number is converted and directed to the converted number
The called party is busy or was not reached
YES
Returns back or ends calling
NO
Controlling of the payment of the call
Is the balance empty
YES
More time has to be reserved
NO

FIG. 4

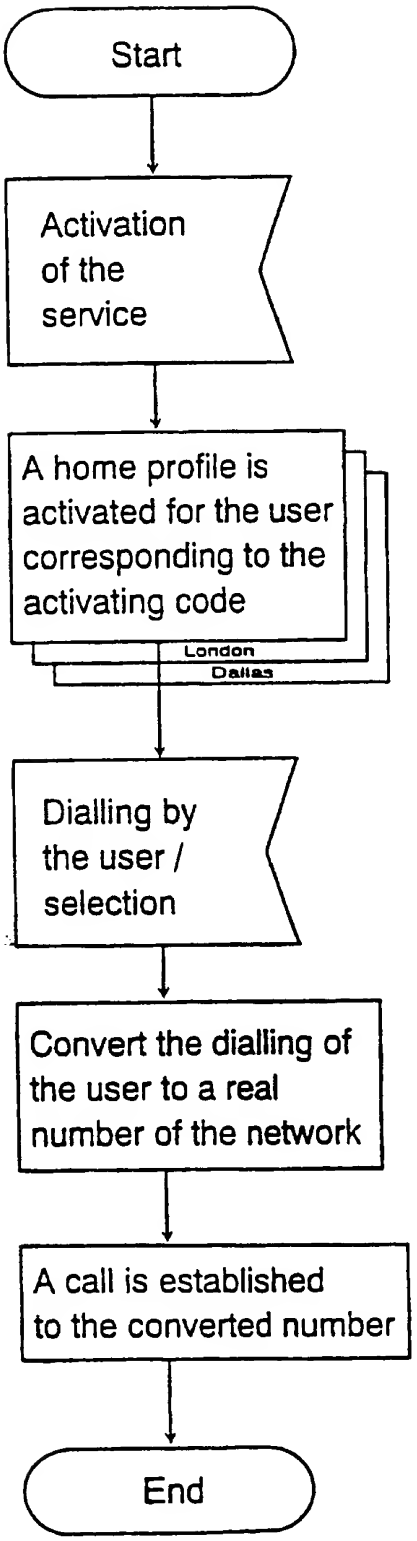
Start
Activation of the service
A home profile is activated for the user corresponding to the activating code
London
Dallas
Dialling by the user / selection
Convert the dialling of the user to a real number of the network
A call is established to the converted number
End

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 97/00336

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 3/00, H04M 3/42
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5418844 A (MORRISEY ET AL), 23 May 1995 (23.05.95), column 5, line 25 - column 7, line 35; column 24, line 28 - column 25, line 59, abstract --	1,3,5,10
A	US 5436957 A (MC CONNELL), 25 July 1995 (25.07.95), column 3, line 65 - column 6, line 38 --	1-10
A	WO 9615633 A1 (OY LM ERICSSON AB), 23 May 1996 (23.05.96), cited in the application --	1-10

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

° Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 October 1997	08-10-1997
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Göran Magnusson Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 97/00336

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9608909 A1 (BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY), 21 March 1996 (21.03.96), page 6, line 25 - page 10, line 5, figure 2 -- --------	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

01/09/97

International application No.
PCT/FI 97/00336

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5418844 A	23/05/95	US 5524146 A	04/06/96
		US 5572583 A	05/11/96
		US 5583920 A	10/12/96
US 5436957 A	25/07/95	NONE	
WO 9615633 A1	23/05/96	EP 0792561 A	03/09/97
		FI 945340 D	00/00/00
		FI 945368 A	12/05/96
WO 9608909 A1	21/03/96	AU 3480895 A	29/03/96
		CA 2199512 A	21/03/96
		EP 0781484 A	02/07/97
		FI 970932 A	05/03/97
		GB 9503939 D	00/00/00

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